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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/351,147	07/12/99	CHESTER A	10164-1

EXAMINER	
GRIFFIN,W	
ART UNIT	**PAPER NUMBER**
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EXXONMOBIL CHEMICAL COMPANY
P O BOX 2149
BAYTOWN TX 77522-2149

DATE MAILED: 06/11/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary	Application No. 09/351,147	Applicant(s) CHESTER ET AL.	
	Examiner Walter D. Griffin	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 May 2001* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

15) ☐ Notice of References Cited (PTO-892)
16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
17) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *12* .
18) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
19) ☐ Notice of Informal Patent Application (PTO-152)
20) ☐ Other: .

DETAILED ACTION

Continued Prosecution Application

The request filed on May 18, 2001 for a Continued Prosecution Application (CPA) under 37 CFR 1.53(d) based on parent Application No. 09/351147 is acceptable and a CPA has been established. An action on the CPA follows.

Response to Amendment

The rejections as detailed in paper no. 7 have been withdrawn.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 7, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by EP 0323736.

The EP reference discloses a process for converting a C_5 to C_{10} paraffinic hydrocarbons into aromatic hydrocarbons and light olefins. The feed to be converted can be a coker gasoline, light FCC gasoline, C_5 to C_7 fractions of straight run naphtha and pyrolysis gasoline. These feeds would necessarily boil within the claimed ranges. The process comprises contacting the feed

with a catalyst comprising ZSM-5 or ZSM-11. The zeolite may have a silica to alumina ratio of 100 or less. The zeolite may be treated with a phosphorus compound. The catalyst also contains a binder material that may be an inactive material such as clay. Active matrix material is not required. Therefore, the limitation that the catalyst contains less than 20 wt.% of active matrix is embraced by the EP reference. Since the process of the EP reference converts the same feeds as claimed with the same catalyst as claimed, the product composition must inherently contain the components in the amounts claimed in claims 7 and 10. See page 2, lines 33-42, page 3, lines 21-54, page 4, lines 11-53, and page 5, lines 13-35.

Claims 1-3, 5, and 7-10 are rejected under 35 U.S.C. 102(a) as being anticipated by Drake et al. (5,898,089).

The Drake reference discloses a process for converting a hydrocarbon feed such as naphtha to produce light olefins (e.g., ethylene and propylene) and aromatic hydrocarbons. The naphtha contains hydrocarbons that contain 4 or more carbon atoms. This naphtha would necessarily boil within the claimed range. The feed is contacted with a catalyst at conditions that include temperatures ranging from about 250° to 1000°C, pressures ranging from 0 to 1000 psig, and WHSV values ranging from 0.01 to 100. The feed may also contain a diluent such as steam in a weight ratio of diluent to hydrocarbon ranging from about 0.01:1 to about 10:1. The catalyst comprises a zeolite such as ZSM-5 that has been treated with a promoter such as phosphorus. The amount of phosphorus can be any amount that suppresses coke formation. It also comprises a clay which corresponds to the claimed inert matrix material. The weight ratio of clay to zeolite ranges from about 1:20 to 20:1. Active matrix material is not required in the catalyst. Therefore, the limitation that the catalyst contains less than 20 wt.% of active matrix is embraced by the

Drake reference. The examples indicate ethylene to propylene weight ratios in the product to be within the claimed ranges and also indicate the production of increased amount of BTX relative to the feed. Since the process of the Drake process converts the same feeds as claimed with the same catalyst as claimed, the product composition must inherently contain the components in the amounts claimed in claims 7, 9, and 10. See col. 1, line 54 through col. 10, line 37 and the examples.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 3, 4, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0323736.

The EP reference discloses a process for converting a C_5 to C_{10} paraffinic hydrocarbons into aromatic hydrocarbons and light olefins. The feed to be converted can be a coker gasoline, light FCC gasoline, C_5 to C_7 fractions of straight run naphtha and pyrolysis gasoline. These feeds would necessarily boil within the claimed ranges. The process comprises contacting the feed with a catalyst comprising ZSM-5 or ZSM-11. The zeolite may have a silica to alumina ratio of 100 or less. The zeolite may be treated with a phosphorus compound. The catalyst also contains a binder material that may be an inactive material such as clay. The ratio of binder to zeolite may be at least 70:30. Conversion conditions include temperatures ranging from 100° to 700°C, a pressure from 10.1 to 720 kPa (1.5 psi to 104 psi), and a WHSV from 0.5 to 400. See page 2, lines 33-42, page 3, lines 21-54, page 4, lines 11-53, and page 5, lines 13-35.

The EP reference does not disclose the claimed amount of phosphorus in the catalyst and does not disclose all the claimed reaction conditions.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of the EP reference by including phosphorus in the amounts claimed because one would utilize phosphorus amounts including those that are claimed in order to provide a process that results in the desired type of conversion.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by utilizing a catalyst/hydrocarbon feed weight ratio within the range claimed because one would utilize any ratio the would result in the effective conversion of the hydrocarbons to the desired product.

Claims 8 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over EP 0323736 as applied to claim 1 above, and further in view of Drake et al. (5,898,089).

As discussed above, the EP reference does not disclose the co-feeding of steam with the feed.

The Drake reference discloses the co-feeding of steam with the feed. The weight ratio of the steam can range from about 0.1:1 to about 10:1. See col. 8,line 66 through col. 9, line 21.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the EP process by including steam with the feed in the amount claimed as suggested by Drake because effective conversion to olefins and aromatics would be expected.

Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Drake et al. (5,898,089).

The Drake reference discloses a process for converting a hydrocarbon feed such as naphtha to produce light olefins (e.g., ethylene and propylene) and aromatic hydrocarbons. The naphtha contains hydrocarbons that contain 4 or more carbon atoms. This naphtha would necessarily boil within the claimed range. The feed is contacted with a catalyst at conditions that include temperatures ranging from about 250° to 1000°C, pressures ranging from 0 to 1000 psig, and WHSV values ranging from 0.01 to 100. The feed may also contain a diluent such as steam in a weight ratio of diluent to hydrocarbon ranging from about 0.01:1 to about 10:1. The catalyst comprises a zeolite such as ZSM-5 that has been treated with a promoter such as phosphorus. The amount of phosphorus can be any amount that suppresses coke formation. It also comprises a clay which corresponds to the claimed inert matrix material. The weight ratio of clay to zeolite

ranges from about 1:20 to 20:1. Active matrix material is not required in the catalyst. Therefore, the limitation that the catalyst contains less than 20 wt.% of active matrix is embraced by the Drake reference. The examples indicate ethylene to propylene weight ratios in the product to be within the claimed ranges and also indicate the production of increased amount of BTX relative to the feed. Since the process of the Drake process converts the same feeds as claimed with the same catalyst as claimed, the product composition must inherently contain the components in the amounts claimed in claims 7, 9, and 10. See col. 1, line 54 through col. 10, line 37 and the examples.

The Drake reference does not disclose all the conversion conditions and does not disclose that the zeolite has an initial silica/alumina ratio less than about 70.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Drake process by utilizing a catalyst/hydrocarbon feed weight ratio within the range claimed because one would utilize any ratio that would result in the effective conversion of the hydrocarbons to the desired product.

It also would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Drake by utilizing a zeolite with the claimed silica/alumina ratio because Drake teaches that any zeolite that catalyzes the desired conversion can be employed. Therefore, one would utilize any ZSM-5 with any silica/alumina ratio that would effectively convert hydrocarbons to the desired products.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Walter D. Griffin whose telephone number is 703-305-3774. The examiner can normally be reached on Monday-Friday 6:30 to 4:00 with alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marian Knode can be reached on 703-308-4311. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-5408 for regular communications and 703-305-3599 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0651.

Walter D. Griffin
Primary Examiner
Art Unit 1764

WG
June 6, 2001